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Cornell Scientist David Soderlund Awarded Over \$2.5 Million for Toxicology Studies

by Joe Ogradnick

GENEVA, NY: Two major research grants from the National Institute of Environmental Health Sciences will support research on the neurotoxic actions of insecticides in the laboratory of David Soderlund, Cornell professor of insecticide toxicology at the New York State Agricultural Experiment Station in Geneva, N.Y. These grants, which will provide more than \$2.5 million over five years, are among the largest single-investigator research grants ever awarded to a member of the Experiment Station's faculty.

The projects involve two chemical classes of insecticides that target the sodium ion channel proteins of nerve membranes. These proteins play a critical role in the electrical signaling of nerve cells. This research is expected to provide new insights into mechanisms of insecticide toxicity that will aid in assessing human health risks associated with the use of these insecticides.

"We are extremely fortunate to have both of these projects funded at the same time," said Soderlund. "Although each project asks different research questions about a different chemical class of insecticides, the main research approaches, techniques, and tools are common to both projects. These two grants will allow us to build a larger research team to address these issues and should make both projects more productive than they would be individually."

For both projects, Soderlund will use cloned sodium channel genes to turn cultured cells into synthetic nerve cells. This technique avoids the use of experimental animals as a source of nervous tissue and has the added benefit of giving researchers precise knowledge of and control over the specific sodium channel proteins they are studying.

The synthetic nerve cell approach also provides the Soderlund laboratory with the means to address one of the most significant problems in toxicology, the need to extrapolate insecticide risks to humans from studies done in other organisms. "The use of cloned genes and cell-expression systems provides us with access to information on insecticide action on human target proteins that is simply not available otherwise," said Soderlund.

"Landing two large grants from NIH in the presence of increased competition nationwide and lower funding rates is huge," said Wendell Roelofs, chair of the Department of Entomology at Geneva. "It is a great testimony to the world-class program that Dr. Soderlund has built up over the decades on studying the mode of action of insecticides and developing novel methods of assessing their toxicity."

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Link: [David Soderlund's faculty webpage](#)

Pictures are linked to hi-res scans



David Soderlund

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